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SOME NEW AND OTHER NOTEWORTHY PLANTS OF THE NORTHWEST.

J. M. GREENMAN.

SPIRÆA DENSIFLORA Nutt. in Torr. and Gray Fl. 1:414.

S. betulæfolia Pall. var. *rosea* Gray, Proc. Am. Acad. 8:381. 1872.

S. lucida Dougl. var. *rosea* Greene, Pittonia 2:221, 1892.

S. arbuscula Greene, Erythea 3:63. 1895.

This showy alpine plant, which has recently attracted considerable attention, was originally collected and characterized as *Spiræa densiflora* by Nuttall, whose type specimen is preserved in the Gray Herbarium. The first publication of the above name, however, appears in Torr. & Gray's *Flora* 1:414, where the plant is briefly described as a roseate-flowered form of *S. betulæfolia*, and the name *S. densiflora* Nutt. MSS. cited as a synonym. In *Proc. Am. Acad* 8:381 Dr. Gray established a variety *rosea* of *S. betulæfolia* Pall., based upon Hall's no. 124, but this plant is exactly the same in every regard as Nuttall's *S. densiflora*, and in no respect more perfectly characterized. In 1892 Prof. Greene (*Pittonia* 2:221) transferred the variety to *S. lucida* Dougl., at the same time suggesting the probability of its being a distinct species, and later (*Erythea* 3:63) published the same as *S. arbuscula*. The examination of a considerable amount of material confirms Prof. Greene's view that this plant should have specific rank; and that it is quite distinct from *S. betulifolia* Pall. may be seen by a comparison with the excellent illustration of the latter species in Pall. *Fl. Ross.* 1:33. *pl.* 16, but there seems no reason for discarding Nuttall's name *S. densiflora*, which although briefly was intelligibly characterized in 1844. The possibility of *S. pyramidata* being the same as *S. densiflora* Nutt., as suggested by Prof. Greene in *Pittonia* 2:221, is quite out of the question. The two plants are very different in inflorescence, foliar characters, and color of the flowers.

A very excellent illustration of *S. densiflora* Nutt. may be found in *Gard. & For.* 10: fig. 53. It may be said, however, that the leaves are somewhat variable as to the serration, being crenate-serrate to rather sharply serrate. To this species may be referred: CALIFORNIA, Brewer 1777, 1932, 2090; Bolander 131; Lemmon, from Sierra Co. (in 1874); Torrey 131; Hansen 235; J. D. Hooker and A. Gray, Hermits Valley: OREGON, Hall 125; Cusick 122, in part, as to small leaved, purple flowered, densely corymbose form: WASHINGTON, Henderson 245; E. C. Smith 354; O. D. Allen 57, 290; Piper 1993; WYOMING, Nelson 941: BRITISH COLUMBIA, mountain slopes in the Selkirk range, Macoun. Probably also extending northward to Alaska.

In the second century of Mr. O. D. Allen's distribution of Washington plants, no. 125 was distributed as *Pyrus sambucifolia* Cham. & Schlecht. It should be referred rather to *Pyrus occidentalis* Watson.

Polemonium bicolor.—A low caespitose perennial: the stems covered below by persistent attenuate sheaths, which remain behind as the remnants of the earlier leaves: flowering stems 6 to 18^{cm} high, glandular pubescent with a few long pilose hairs intermixed, 1–3-leaved: the basal leaves with somewhat dilated or clasping petioles; the leaflets 21 to 31 in number, obovate-rotund to oblanceolate, 4 to 6^{mm} long, 2 to 4^{mm} broad, glandular-pubescent with a strongly glandular-ciliate margin, more or less crowded or sometimes imbricated: inflorescence cymulose: peduncles 1^{cm} or less in length, glandular-pubescent: calyx 6 to 8^{mm} long, veiny, glandular-pubescent with long spreading pilose hairs intermixed; lobes oblong linear, obtuse, corolla with a deep yellow throat and a dark purple to whitish limb, narrowly funnelform, 12 to 16^{mm} long; tube slightly amplified above, somewhat exceeding the calyx; the obovate lobes 5 to 7^{mm} long: stamens shorter than the corolla; filaments not appendaged at their pubescent bases: style slender, filiform, nearly as long as the corolla: capsule glabrous, 4^{mm} long, or about one-half as long as the more or less persistent calyx; seeds angular, 1.5 to 2^{mm} long.—Collected by O. D. Allen on Mt. Rainier, Washington, altitude 2460^m, August 8, 1897, no. 294.

To this species may be referred specimens collected by Suksdorf on Mt. Adams (Mt. Paddo), Washington, altitude 2150–2460^m, August 9, 1882, no.

79; Howell, Mt. Adams (in 1882); Henderson 2411, East Mt. Adams; E. C. Smith 780, Mt. Rainier, altitude 2770^m, August 1890; O. D. Allen 62, Mt. Rainier; Piper 2129, Mt. Rainier, altitude 2770^m, August 1895.

A species well marked by its cespitose habit and glandular character, and especially by the long narrowly funnelform corolla, quite distinct from *P. humile* Willd. var. *pulchellum* Gray, with which it has been confused. The most nearly related species is the *P. Richardsonii* Graham, *Bot. Mag. pl.* 2800. A part of the type material of the latter species is in the Gray Herbarium, and it is a plant with larger nearly glabrous leaflets and somewhat broader calyx-lobes and less tubular corolla.

POLEMONIUM VISCOSUM Nutt. var. **pilosum**.—Stems 6 to 10^{cm} high; the entire plant covered with a spreading pilose pubescence intermixed with short glandular viscid hairs: leaflets usually less crowded or imbricated than in the type of the species: the calyx-lobes somewhat variable, oblong-ovate to distinctly oblong, obtuse or rounded at the apex: corolla white or pale blue with a yellowish center, 1^{cm} or less long.—Collected by O. D. Allen in clefts of rocks on Goat mountain, Washington, altitude 1540^m, July 6, 1896, no. 261.

Somewhat intermediate between the above variety and the species proper are specimens from Lassen's Peak, California, collected by J. G. Lemmon in 1875 (nos. 20, 960), referred by Dr. Gray to *P. humile* Willd. var. *pulchellum* Gray. Mr. Lemmon's specimens have the spreading pilose pubescent character of the variety, but to a much less extent, particularly on the calyx. There is also in the Gray Herbarium a specimen from Lassen's Peak, collected by Mrs. Austin in 1879, likewise referred to *P. humile* Willd. var. *pulchellum* Gray, which corresponds very accurately to Nuttall's type of *P. viscosum*.

Veronica Allenii.—Perennial: stems 6 to 8^{cm} high, nearly glabrous below, pubescent above: the lower leaves much reduced, the upper sessile, thickish, oblong or oblong-ovate, 10 to 14^{mm} long, 4 to 9^{mm} broad, obtuse, glabrous or with a few scattered hairs on the midrib and margin: inflorescence in a terminal raceme, glandular-pubescent: peduncles 2 to 5^{mm} in length, often exceeding the herbaceous glandular bracts: calyx unequally 5-parted; divisions oblong or oblong-ovate, obtuse or rounded at the apex, covered on the outer surface and along the margin with long slender glandular hairs: corolla 6 to 7^{mm}

in diameter, white or white with a slightly purplish puberulent throat; the upper lobe sub-rhombic, conspicuously emarginate, the lateral lobes ovate or ovate-rhombic, somewhat larger than the lower lobe: stamens exserted: ovary closely covered above with short glandular hairs; style exserted, about 5^{mm} in length: fruit not seen.—Collected by O. D. Allen along Paradise river on Mt. Rainier, altitude 1700^m, August 20, 1897, no. 95a.

A species habitally like *V. Cusickii* Gray, but differing by the somewhat smaller flowers, the white corolla, and less exserted stamens and style.

Castilleia oreopola.—Simple or many stemmed from a perennial base: stems erect, 1.5 to 3^{dm} high, somewhat furrowed by the inconspicuous decurrence of the leaves, below glabrous or nearly so, covered above with a scattered spreading soft pubescence: leaves sessile, oblong-lanceolate, 2 to 4^{cm} long, 5 to 10^{mm} broad, with one or two pairs of divaricately spreading linear-attenuate lobes, 3-nerved, glabrous or the uppermost covered with a soft spreading pubescence especially on the nerves and margins; the lower leaves much reduced, usually entire: inflorescence terminating the stem in a short close subcapitate raceme, later becoming elongated: bracts 3-cleft to the middle, the lobes as well as the calyx of a "deep rose-purple:" calyx 18^{mm} long, about equally divided anteriorly and posteriorly for one-half its entire length; lobes oblong-linear, obtusish: corolla 2^{cm} long; the narrow exserted galea green on the back with thin subscarious deep rose-purple margins; lip included, rather deeply and subequally 3-lobed: mature capsule oblong, about 1^{cm} long, glabrous.—Collected by W. N. Suksdorf in damp ground, on Mt. Adams (Mt. Paddo), Washington, altitude 1840 to 2150^m, August and September, 1891, no. 2046, distributed as *Castilleia miniata* Dougl. var. *alpina* Suksdorf; O. D. Allen, Mt. Rainier, altitude 2150^m, July 20, 1892, no. 11; also by the same collector in open ground on Goat mountain, altitude 1540^m, July 12, 1895, no. 134, the latter distributed as *C. alpina* Greenman, n. sp.

On account of the previous use of the name *alpina* in this genus by Porter it seems advisable to publish the species under the above name in order to avoid further and unnecessary change. A species readily recognized by the deep purple or almost magenta color of the bracts and flowers, and distinguished from *C. parviflora* Bong., its nearest ally, by the larger flowers, longer calyx, usually 3-cleft leaves, narrower and 3-lobed instead of 5-lobed bracts.

For some time it has been evident that the many forms under *Castilleia pallida* of American authors have constituted an extremely composite group. The recent activity among collectors of the northwest has brought to hand a considerable amount of complete material. A study of the group in the light of more copious material and recently collected specimens has made it possible to separate out as distinct species or varieties certain so-called forms hitherto included under *C. pallida*.

Castilleia pallida HBK. Nov. Gen. & Spec. 2: 331. 1817; Kunth, Syn. Pl. Æquin. 2: 100. 1823; Gray, Syn. Fl. 2: 297. *Bartsia pallida* L. Spec. 2: 602 (Gmel. Fl. Siber. 3: 201. pl. 42). —Perennial: stems 1.5 to 3^{dm} or more high, rather sparingly pubescent below, covered above, especially in the inflorescence, with long somewhat matted hairs: leaves lance-attenuate, mostly entire, the upper usually broader and more or less lobed, soft-puberulent on either surface: calyx about 2^{cm} long, cleft about equally before and behind, the lateral divisions again more or less 2-cleft; lobes linear-lanceolate, obtusish: corolla slightly exceeding the calyx; galea about 7^{mm} long, nearly or quite twice exceeding the rather prominently 3-lobed lip.—Originally collected in Siberia.

There is in the Gray Herbarium a specimen, from the Herbarium of the Academy of St. Petersburg, collected by Chamisso on the island of Chamisso. This plant has been taken as typical of the species.

CASTILLEIA PALLIDA HBK. var. **lutescens**.—Stems 3 to 5.5^{dm}. high, somewhat stouter than the species, usually branched above: leaves linear-lanceolate to oblong-lanceolate, the lower entire, the upper often trifid or sometimes even with a second pair of lateral lobes, scabrous especially on the upper surface: lip

slightly shorter in proportion to the length of the galea than in the species proper.—Suksdorf 424, prairies, Spokane co., Washington, June 1884; C. V. Piper 1667, Pullman, Washington, June 26, 1893; Rev. H. H. Spaulding, Clear Water, Oregon; F. Lamson Scribner 197, near Jefferson City, Montana, June 27, 1883; Messrs. Sandberg, MacDougal, and Heller 450, Latah co., Idaho, June 20, 1892; Macoun 5, Sproat, B. C., June 24, 1890.

CASTILLEIA PALLIDA HBK. var. **camporum**.—Stems usually several rising from a perennial base, 1.5 to 4^{dm} high, more or less covered with a spreading pilose pubescence: leaves narrowly oblong-lanceolate, the lower mostly entire, the upper irregularly laciniately 3-7-lobed with rather narrow ascending lobes, pubescent upon either surface: inflorescence greenish yellow or tinged with red, later becoming much elongated: calyx 2 to 2.5^{cm} long; lateral divisions again shortly 2-lobed (rarely entire), obtuse or even rounded at the apex; lip one-half to two-thirds as long as the galea.—Suksdorf 423, low prairies, Spokane co., Washington, June 1884; Piper 2514, Powder river mountains, Oregon, August 1896: Cusick 840, Union co., Oregon, 1879, in the Gray Herbarium under "*Orthocarpus castilleioides*;" also a duplicate specimen under "*C. pallida fere vera*." A specimen from Henderson, Lincoln co., Washington, 1892, no. 2266, seems to have its affinity here, as does also an imperfect specimen from the Herb. Geol. and Nat. Hist. Survey of Canada, collected by McEvoy, along Meadow creek, B. C., June 24, 1890, no. 2. In the latter specimen, however, the calyx is unusually long, being fully 3^{cm} in length.

The above variety appears to be intermediate between the species proper and the var. *occidentalis*, having more divided leaves and more spreading pubescence than the species, but approaching the var. *occidentalis* as shown by specimens collected by Scribner in the Little Belt mountains, Montana, no. 198, and also specimens obtained by Aven Nelson at Dome lake, Wyoming, no. 2435.

Castilleia pallescens.

Orthocarpus pallescens Gray, Syn. Fl. 2 : 299.

O. Parryi Gray, Am. Nat. 8 : 214.

The examination of a considerable amount of material shows that this species, hitherto somewhat doubtfully referred to *Orthocarpus*, has its affinity rather with the genus *Castilleia*. Notwithstanding the rather prominent lower lip and the short, broad galea, yet the very slight saccate character of the lip, and the calyx cut about equally before and behind with the lateral lobes shortly 2-cleft at the apex, combined with the perennial habit, all indicate its relation to *Castilleia*, and to the *C. pallida* group. In addition to the characters already given the following supplementary description may be appended. Stems 1.5 to 3^{dm} high, usually several rising from a woody perennial base, simple or sparingly branched above, cinereous-puberulent often with spreading pilose hairs, especially below.

Nuttall's specimen from the Rocky mountains; Parry 218, Northwestern Wyoming Expedition, 1873; Cusick 93, Union, Oregon, 1875; Canby, near Blackfoot City, Montana, July 11, 1883, no. 261 in part (as to specimens distributed under *Orthocarpus pallescens* Gray, not as to specimen distributed as *O. pilosus* Watson); Macoun, Kamloops, B. C., June 13, 1889; here also may be referred as more pubescent forms, Henderson 2267, 2268, 2269, Washington; and a plant of Dr. Lyall's Oregon Boundary Collection of 1860 originally distributed as "*Castilleja pallida* var.?"

Castilleia Cusickii.—Stems several from a procumbent base, 4 to 4.5^{dm} high, simple or branched above, green or greenish purple, covered with a short spreading or slightly reflexed cinereous pubescence: leaves scattered, sessile, 3-nerved, hirtellous-puberulent upon either surface, the lower leaves linear to linear-lanceolate, acute, 2 to 3^{cm} long, about 3^{mm} wide, the upper somewhat larger, 3.5 to 4.5^{cm} long, 3 to 5^{mm} broad, and usually laciniately lobed with one or two pairs of slender divaricately spreading lobes on either side, the veins beneath prominent: racemes rather dense, 3 to 10^{cm} long, 1.5^{cm} or less broad; rhachis covered with a long flaccid sublanate pubescence: bracts about equaling or slightly exceeding the flowers, oblong, obtuse, or rounded at the apex, usually undivided and entire, strongly ciliate toward the base, distinctly 3-nerved, and rather strongly reticulate-veined, 23 to 28^{mm} long, about 7^{mm} broad: flowers 2

to 2.5^{cm} long: calyx pubescent on the outer surface, nearly equally divided anteriorly and posteriorly; the lateral divisions linear-oblong, 2-dentate or shallowly 2-lobed at the apex, prominently 2-veined even to the base of the calyx: corolla 2 to 2.5^{cm} long, slightly exceeding the calyx, but scarcely twice the length of the rather prominent but not saccate 3-lobed lip: only the two anterior stamens protruding beyond the lip: style somewhat exceeding the galea, shallowly 2-lobed: capsule oblong, about 1^{cm} long, 4^{mm} broad, glabrous.—Collected by William C. Cusick in Sumter valley, Blue mountains, Oregon, July 6, 1897, no. 1700. The flowers are said by the collector to be “pale yellow rarely tinged with red.”

A species related to *C. pallida* HBK., from which it is distinguished by the foliar characters, pubescence of the stem and leaves, and the long, slender inflorescence.

Castilleia levisecta.—Many stemmed from a perennial base: stems 1.5 to 3^{dm} high, usually unbranched above, covered with a soft more or less spreading unequal pilose pubescence: leaves oblong-lanceolate, 2.5 to 4^{cm} long, 5 to 12^{mm} broad, 3–5-nerved, pubescent upon either surface, often bearing rather long pilose hairs on the veins beneath: the lower somewhat narrower and often entire; the upper more dilated and shallowly lobed toward the apex with one to three pairs of lobes on either side: inflorescence rather densely spicate or subracemose: bracts yellow, rather broad, subdigitately lobed at the apex: calyx 15 to 18^{mm} long, nearly equally cut before and behind, externally pubescent; the lateral lobes again rather deeply 2-lobed, obtuse or rounded at the apex: corolla 2^{cm} or more long; galea 6 to 9^{mm} long; the lip one-third as long as the galea, shortly and obtusely 3-lobed: capsule glabrous, 8 to 10^{cm} long, usually covered by the persistent pubescent calyx.—Howell 279, Mill plain, Washington, 1880, O. D. Allen 83, Roy, Washington, May 19, 1889; F. Binns, in open woods and hills, Pt. Ludlow, Washington, June 15, 1890; Macoun 715, vicinity of Victoria, Vancouver Island, B. C., May 16, 1893.

A species hitherto confused with *C. pallida* HBK., but differing materially in the foliage, and in the character of the lip of the corolla.

Castilleja cervina.—Cinereous-puberulent throughout: stems simple, 6^{dm} or more high, somewhat striate above: leaves usually deeply 3(-5)-parted, with the lateral divisions linear-attenuate and divaricately spreading: the lower flowers of the spicate inflorescence short-pedicellate: bracts laciniately 3-5-lobed, lobes ascending, these as well as the calyx and corolla, in the dried state, tipped with yellow: calyx 1.5 to 2^{cm} long, more deeply cut before than behind; the lateral lobes again shortly and acutely bilobed: corolla 2 to 2.5^{cm} long; galea about 6^{mm} long; the lip nearly or quite one-half as long as the galea, lobes conspicuous and subequal: stamens and stigma exserted.—Collected by Dawson on dry ground, Lower Arrow lake, B. C., June 17, 1889; and in the same locality by Macoun, June 5, 1890, no. 11.

Most nearly related to *C. breviflora* Gray, from which it is readily distinguished by the taller habit and the pubescence of the inflorescence.

NEMACLADUS RIGIDUS Curran. This interesting little plant, hitherto known only from the type locality, was collected by Mr. Cusick on the hillsides of the Malheur, Oregon, June 1897, no. 1625.

GRAY HERBARIUM OF HARVARD UNIVERSITY.